

FIGURE 1A

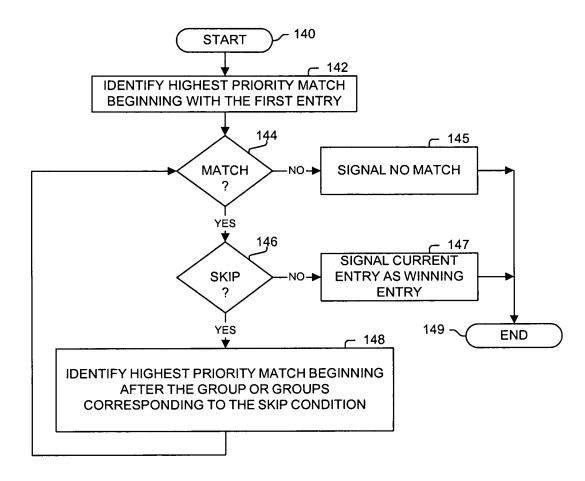


FIGURE 1B

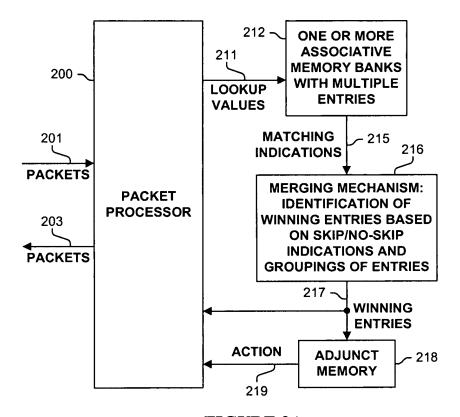


FIGURE 2A

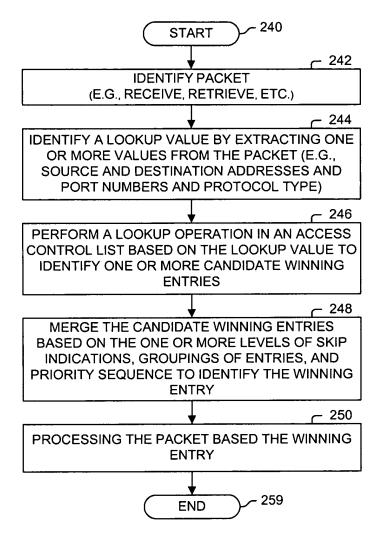


FIGURE 2B

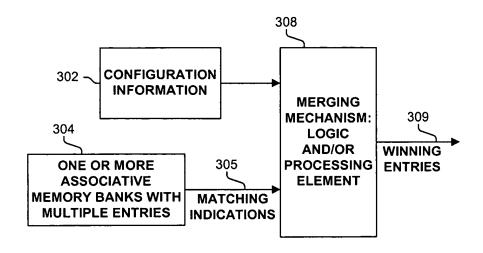


FIGURE 3A

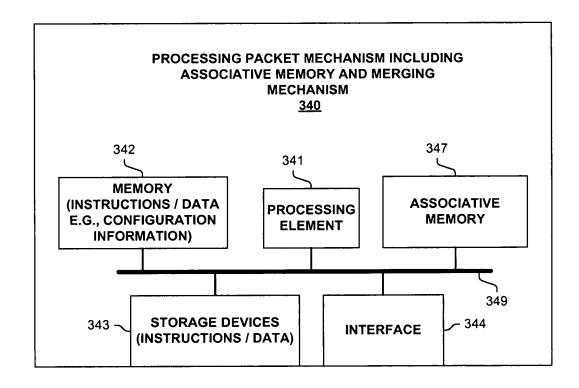


FIGURE 3B

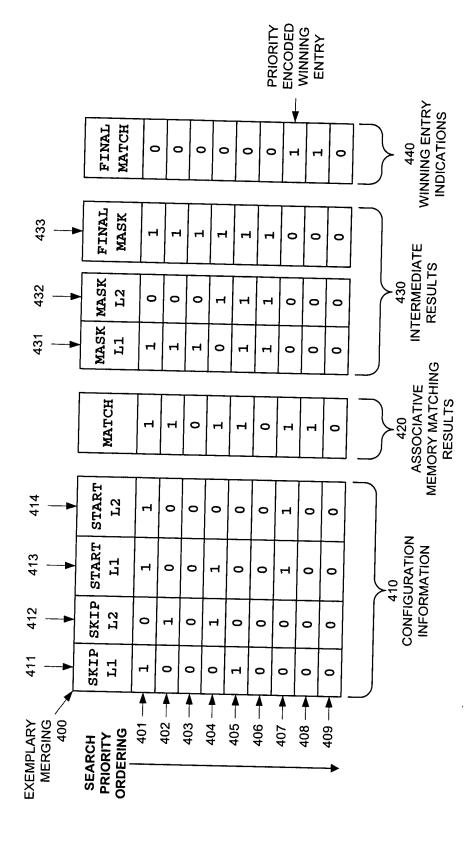


FIGURE 4A

```
MASK_L1[0] = MATCH[0] * SKIP_L1[0]

MASK_L1[1] = MATCH[1] * SKIP_L1[1] + ~START_L1[1] * MASK_L1[0]

MASK_L1[2] = MATCH[2] * SKIP_L1[2] + ~START_L1[2] * MASK_L1[1]

...

MASK_L2[0] = MATCH[0] * SKIP_L2[0]

MASK_L2[1] = MATCH[1] * SKIP_L2[1] * ~MASK_L1[1] + ~START_L2[1] * MASK_L2[0]

MASK_L2[2] = MATCH[2] * SKIP_L2[2] * ~MASK_L1[2] + ~START_L2[2] * MASK_L2[1]

...
```

**FIGURE 4B** 

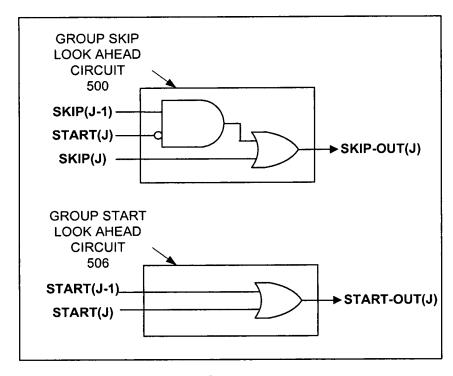
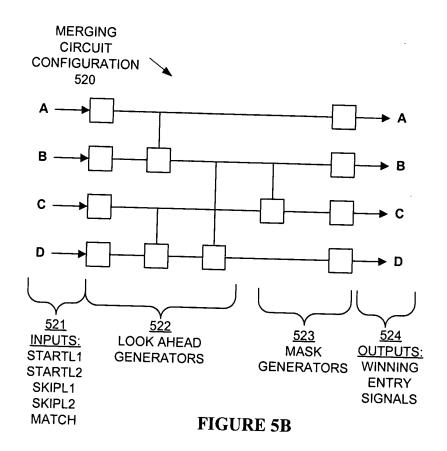


FIGURE 5A



EXEMPLARY
MERGING LOGIC
EQUATIONS
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INPUTS:

CONFIGURATION:

STARTL1-A, STARTL1-B, STARTL1-C, STARTL1-D

STARTL2-A, STARTL2-B, STARTL2-C, STARTL2-D

SKIPL1-A, SKIPL1-B, SKIPL1-C, SKIPL1-D

ASSOCIATIVE MEMORY: MATCH-A, MATCH-B, MATCH-C, MATCH-D

## LEVEL ONE LOOK AHEAD

SKIPAtmp = (SKIPL1-A and MATCH-A and not STARTL1-B)

SKIPL1-OUT = (SKIPL1-B and MATCH-B) or SKIPAtmp

STARTL1-OUT = STARTL1-B or STARTL1-A

## LEVEL TWO LOOK AHEAD

SKIPL2OUT = (SKIPL2-B and MATCH-B and not SKIPAtmp) or (SKIPL2-A and MATCH-A and not STARTL2-B) STARTL20UT = STARTL2-B or STARTL2-A

## TERMINAL MASK GENERATOR

MASKL1-A = SKIPL1-A and MATCH-A

MASKL1-B = SKIPL1-B and MATCH-B or (MASKL1-A and not STARTL1-B)

MASKL1-C = SKIPL1-C and MATCH-C or (SKIPL1-OUT and not STARTL1-C)

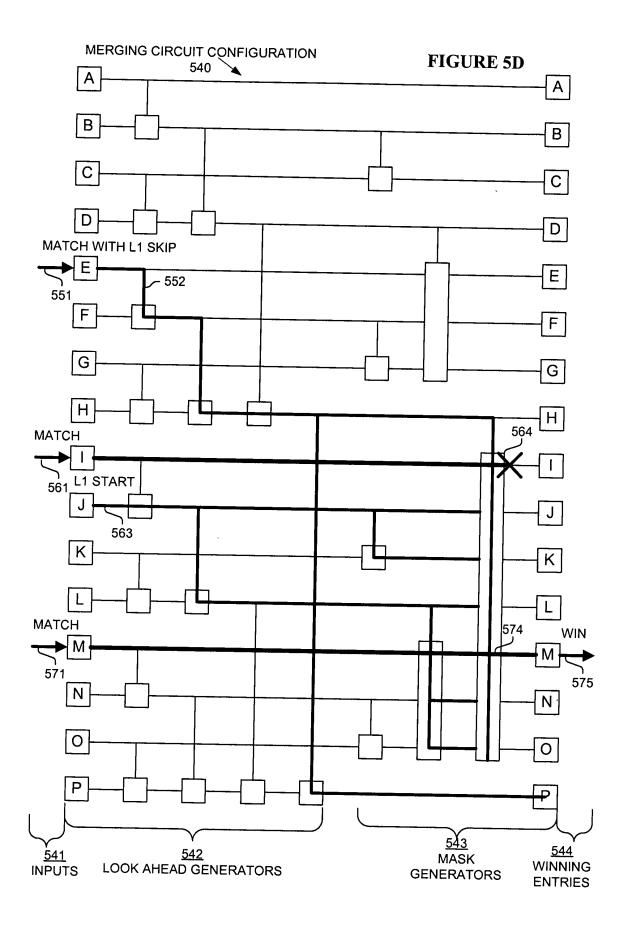
MASKL1-D = SKIPL1-D and MATCH-D or (MASKL1-C and not STARTL1-D)

MASKL2-A = (SKIPL2-A and MATCH-A)

MASKL2-B = (SKIPL2-B and MATCH-B and not MASKL1-B) or (MASKL2-A and not STARTL2-B)

MASKL2-C = (SKIPL2-C and MATCH-C and not MASKL1-C) or (SKIPL2OUT and not STARTL2-C) MASKL2-D = (SKIPL2-D and MATCH-D and not MASKL1-D) or (MASKL2-C and not STARTL2-D)

## FIGURE 5C



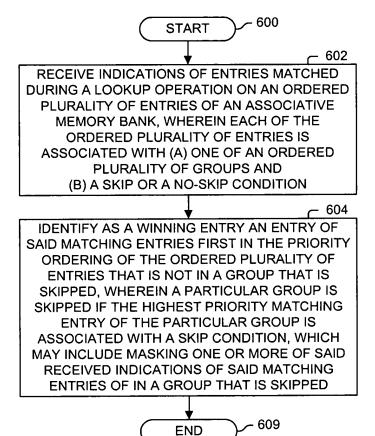


FIGURE 6A

RECEIVE INDICATIONS OF ENTRIES MATCHED
DURING A LOOKUP OPERATION ON AN ORDERED
PLURALITY OF ENTRIES OF AN ASSOCIATIVE
MEMORY BANK, WHEREIN EACH OF THE
ORDERED PLURALITY OF ENTRIES IS
ASSOCIATED WITH (A) ONE OF AN ORDERED
PLURALITY OF HIERARCHICAL FIRST GROUPS, (B)
ONE OF AN ORDERED PLURALITY OF
HIERARCHICAL SECOND GROUPS, (C) A SKIP OR A
NO SKIP FIRST LEVEL CONDITION, AND (D) A SKIP
OR A NO SKIP SECOND LEVEL CONDITION

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IDENTIFY AS THE WINNING ENTRY AN ENTRY OF SAID MATCHING ENTRIES FIRST IN THE PRIORITY ORDERING OF THE ORDERED PLURALITY OF ENTRIES THAT IS NOT IN A GROUP OF THE HIERARCHICAL FIRST OR SECOND GROUPS THAT IS SKIPPED, WHEREIN A PARTICULAR FIRST GROUP OF THE FIRST HIERARCHICAL GROUPS IS SKIPPED IF THE HIGHEST PRIORITY MATCHING ENTRY OF THE PARTICULAR FIRST GROUP IS ASSOCIATED WITH A SKIP FIRST LEVEL CONDITION, AND A PARTICULAR SECOND GROUP OF THE SECOND HIERARCHICAL GROUPS IS SKIPPED IF THE HIGHEST PRIORITY MATCHING ENTRY OF THE PARTICULAR SECOND GROUP IS ASSOCIATED WITH A SKIP SECOND LEVEL CONDITION, WHICH MAY INCLUDE MASKING ONE OR MORE OF SAID RECEIVED INDICATIONS OF SAID MATCHING ENTRIES OF IN A GROUP THAT IS SKIPPED.

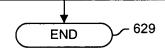


FIGURE 6B